

29 August.—Shot a specimen going about from tree to tree, obviously in search of a nest to lay in. Her oviduct contained a complete egg. The shell was soft and leathery, but had a pale blue tinge.

25 and 26 September.—A pair flying about noisily from tree to tree among paddy fields. The call is *piu, piu, pee-pee-piu, pee-pee-piu*—rather plaintive.

29 September.—Heard calling. Later, a pair seen following each other from tree to tree, calling loudly.

The last record for the season I have is October 15, by which date the birds had become distinctly scarce. They were quite common throughout the foregoing period, perhaps most plentiful between June 15 and the latter half of August. The specimen shot on October 15 was solitary and apparently juvenile. Male. Testes very small. Upper plumage dull dusky black; underparts strongly suffused with fulvous. Stomach contained two pieces of quartz and a couple of brown hairy caterpillars.

Since the above date, the birds seem to have completely vanished.

KIHIM (KOLABA DIST.),

SALIM A. ALI.

October 29, 1930.

[Writing subsequently Mr. Ali mentions that two single birds were seen on the 10th November which were doubtless young of the season. Upper parts in both sooty black; lower much suffused with fulvous. EDS.]

XIX.—BIRDS OBSERVED IN THE NEIGHBOURHOOD OF RANIKHET.

The following observations cover the period April 30 to June 11. As no collecting was done, sub-specific identifications are not attempted.

Ranikhet is not a very high Hill-station. The bungalow in which the writer was staying is about the highest, and is only 6,200 ft. above sea-level. Most of the following observations were made between 5,500 and 6,500.

The hills are, for the most part, covered with forest, the chief trees being Cheer Pine, Himalayan Oak, and Rhododendron. In addition to these, Deodar, Cypress, and Horse-Chestnut are also fairly common. The forest on the northern slopes is a good deal more open, and with less undergrowth than on the southern slopes. There is a certain amount of cultivation, particularly the Government Gardens below Chaubattia, and also a good deal of ground covered with coarse growth which was evidently under cultivation once, but which appears to have been left untouched for many years. The following birds were observed:

Corvus coronoides Gould. The Jungle-Crow.

This is the common crow of Ranikhet, and is found everywhere except in the thickest forest. A nest containing fully-fledged young was found about fifty feet up a pine on the edge of a clearing on May 22.

Corvus splendens Vieill. The House-Crow.

Only seen two or three times, always in the station itself.

***Urocissa melanocephala* (Lath.). The Red-billed Blue Magpie.**

Very numerous wherever there are trees. Appears to breed in May. A pair were very busy picking up sticks below the British Military Hospital on May 4.

***Garrulus bispecularis* Vigors. The Himalayan Jay.**

Seen occasionally, generally in pairs.

***Garrulus lanceolatus* Vigors. The Black-throated Jay.**

Very numerous. At the beginning of May this species was generally seen in small parties up to about six in number. After the middle of the month, however, they were almost invariably seen in pairs.

***Parus major* Linn. The Grey Tit.**

Seen occasionally, sometimes alone and sometimes in mixed flocks with other species of tits. A family of young birds which could not have left the nest more than a few days was seen on May 10.

***Parus monticolus* Vigors. The Green-backed Tit.**

The commonest Tit at Ranikhet. A brood of young left their nest on April 30.

***Maclophus xanthogenys* (Vigors.) The Yellow-cheeked Tit.**

Small parties seen occasionally.

***Aegithaliscus concinnus* Gould. The Red-headed Tit.**

Numerous; usually occurring in large flocks. These, flocks are occasionally mixed with other species, but are more often homogeneous. The species which seems most frequently to mix with them is *Zosterops palebrosa*. They are particularly partial to wild raspberries.

***Sitta frontalis* Horsf. The Velvet-fronted Nuthatch.**

A party of three or four in a mixed flock of Tits was seen in thin forest about 6,300 ft. above sea level on May 28th.

***Garrulax albogularis* (Gould). The White-throated Laughing-Thrush.**

A fairly large flock was to be seen almost daily in fairly thick forest by the path to the Dhobi Ghat on the northern slope of Chaubattia. It was seen nowhere else.

***Trochalopteron lineatum* (Vigors). The Streaked Laughing-Thrush.**

Very numerous. A nest containing half-fledged young found eighteen inches from the ground in oak-scrub by the side of a main road on May 14.

***Pomatorhinus erythrogenys* Vigors. The Rusty-cheeked Scimitar Babbler.**

Seen occasionally in a thickly wooded Nullah rather below 6,000 ft.

***Leioptila capistrata* (Vigors). The Black-headed Sibia.**

A pair seen behaving as if they had a nest near on the edge of forest on May 9.

Microscelis psaroides (Vigors). **The Black Bulbul.**

Fairly numerous in forest. Not seen within the station, or on open or cultivated ground.

Molpastes cafer (Gmel.) **The Red-vented Bulbul.**

Fairly numerous by the road up to Ranikhet below 4,500 ft. Above that height only seen once, a small flock on open ground about 6,300 ft. on May 9.

Molpastes leucogenys (Gray). **The White-cheeked Bulbul.**

Fairly numerous within the station and on rough ground which has gone out of cultivation. At the beginning of May this species was generally seen in pairs; from the end of May onwards in family parties or small flocks.

Certhia himalayana Vigors. **The Himalayan Tree-Creeper.**

Very numerous, generally in pairs, both in gardens and forest.

Saxicola caprata bicolor (Sykes). **The Indian Bush-Chat.**

Numerous on open ground below 5 500 ft., particularly in the rough scrub below the pipe-line. By their behaviour they were evidently breeding, and a nest which appeared to belong to this species was found ready for eggs on June 7.

Saxicola torquata (Linn). **The Stone-Chat.**

Found on the same ground as the last species, but not in such great numbers. It also appeared to be breeding.

Oreicola ferrea (Gray). **The Dark Gray Bush-Chat.**

One seen in the station May 5. No other record.

Enicurus maculatus Vigors. **The Spotted Forktail.**

One seen on a stream below Ranikhet May 10, and one at Siunī, about ten miles away, May 19. Height in each case about 5,500 ft.

Chaimarrornis leucocephala (Vigors). **The White-capped Redstart.**

One seen on a stream crossing the Kathgodam—Ranikhet road, about 4,000 ft., Apr. 30.

Copsychus saularis (Linn). **The Dhayal or Magpie-Rohin.**

Male and female seen two or three times near the Ranikhet Military Hospital in May.

Turdus boulboul (Lath). **The Gray-winged Blackbird.**

Very numerous, particularly near streams: The 'Fauna' (second edition) Vol. II, p. 132 says 'It sings very little except in the early mornings.' During the whole time I was in Ranikhet, its voice was to be heard near every stream from daylight till about 9 a.m. and from 4 p.m. to dark. A broken egg which evidently belonged to this species was picked up on a path on May 3. In June these birds became very pugnacious, and seemed to be fighting amongst themselves whenever seen.

Arceuthornis viscivorus (Linn). **The Missel-Thrush.**

Fairly numerous in forest above 6000 ft. throughout May and June. Young birds were seen leaving a nest in an oak about 6,200 ft. on May 19.

Oreocincla dauma (Lath). The Small-billed Mountain-Thrush.

One seen in the station about 6,000 ft., May 25

Monticola cinclorhyncha (Vigors). The Blue-headed Rock-Thrush.

Very common on open ground and in light forest. Many more males than females seen. A young bird which could not have left the nest more than a day or two seen June 6.

Monticola solitaria (P. L. S. Müller). The Blue Rock-Thrush.

One female seen below Ranikhet, about 5,000 ft., June 11. No other record.

Myiophonus temminckii Vigors. The Himalayan Whistling-Thrush.

Seen on every stream which contained water above 2,300 ft. between Kathgodam and Ranikhet.

Cyornis tricolor (Hodgs). The Slaty-blue Flycatcher.

One seen near the top of Chaubattia, about 7,000 ft., May 11.

Cyornis supercilialis (Jerdon). The White-browed Blue Flycatcher.

Fairly numerous in the earlier part of May, but much less so towards the end of the month and in June.

Stoparola melanops (Vigors). The Verditer Flycatcher.

Fairly numerous, and appeared to be breeding.

Alseonax latirostris (Raffl). The Brown Flycatcher.

Occasionally seen, generally in the station.

Hemipus picatus (Sykes). The Pied Shrike.

One seen in Govt. Gardens, Chaubattia, June 4. No other record.

Pericrocotus brevirostris (Vigors). The Short-billed Minivet.

Common wherever there are trees. In May this species was almost always met with in pairs. From the beginning of June they were generally in small flocks.

Dicrurus macrocercus (Vieill). The Black Drongo or King-Crow.

Fairly numerous.

Dicrurus leucophæus (Vieill). The Ashy Drongo.

Numerous wherever there are trees. A pair had a nest about twelve feet from the ground in a pine tree in the compound of the house in which I was staying. The young birds left the nest on June 8. While the young birds were still in the nest, the old birds were seen to attack and drive away Crows, Kites, Mynahs, Scavenger Vultures, and a Red-legged Falconet.

Seicercus xanthoschistus (Hodgs). The Grey-headed Flycatcher-Warbler.

Very common. A brood of young which could not have left the nest earlier than that day were seen at Siuni on May 18. From that day on, young birds were seen everywhere,

Oriolus oriolus (Linn.). The Golden Oriole.

One seen in the grounds of the Ranikhet Military Hospital, May 3.
No other record.

Acridotheres tristis (Linn.). The Common Mynah.

Common and breeding. Nests containing young found from May 18 onwards, and a nest containing eggs on June 7. The latter was in a hole in an oak; all the rest in buildings.

Æthiopsar fuscus (Wagl.). The Jungle-Mynah.

One seen in scrub below the pipe-line about 5,700 ft., May 23.
No other record.

Gymnoris xanthocollis (Burton). The Yellow-throated Sparrow.

Several seen in gardens on May 1, but none seen after that date.

Passer domesticus (Linn.). The House-Sparrow.

Fairly numerous in the bazaar, not often seen elsewhere.

Passer rutilans (Temm.). The Cinnamon Tree-Sparrow.

Very numerous, both round houses and in the more open forest. They were busy building at the beginning of May, and some were seen carrying nesting materials as late as the second week in June. There were three nests under the eaves of the house in which I was staying. One brood hatched out on June 6.

Delichon urbica (Linn.). The House-Martin.

One seen June 2. No other record.

Hirundo daurica Linn. The Striated Swallow.

Numbers of these Swallows were to be seen daily below the pipe-line, particularly over a stream running through scrub and amongst rocks. I searched the rocks carefully, and found the remains of several old nests on the under-surface of some of the larger overhanging rocks, but no sign of new work.

Zosterops palebroza (Temm.). The White-eye.

Very common in pairs and small flocks. The flocks were occasionally mixed with tits, but were generally homogeneous.

Picus squamatus Vigors. The Scaly-bellied Green Woodpecker.

Numerous. A nest containing young found May 5th. A pair of Mynahs appeared to be trying to enter the hole, and were vigorously repelled by one of the woodpeckers.

Picus vittatus Vieill. The Himalayan Scaly-bellied Woodpecker.

Occasionally seen.

Dryobates himalayensis (Jard. and Selby.). The Himalayan Pied Woodpecker.

Fairly numerous. One seen excavating a nesting-hole in a dead pine May 10. This species has a curious habit in the early mornings of rubbing its bill on a branch with the motion of a man sharpening a scythe. It seemed possible that this was its method of cleaning its bill, and was part of its morning toilet.

Dryobates auriceps (Vigors). The Brown-fronted Pied Woodpecker.

Quite the commonest Woodpecker at Ranikhet. Family parties were commonly seen from the end of May.

Leiopicus mahrattensis (Lath.). The Yellow-fronted Pied Woodpecker.

An adult was seen on an oak picking insects out of the bark and feeding a young bird clinging to the trunk below her on June 6.

Megalaima virens (Bodd.). The Great Himalayan Barbet.

Numerous and noisy.

Cuculus canorus (Linn.). The Common Cuckoo.

Numerous, particularly on open ground below 6,000 ft. Some individuals began to give the broken call ('Cuck-cuckoo') on May 23, but others continued in full call till I left on June 11. As in England the interval between the two notes of the Cuckoo's call varies slightly, but whereas the variation in England is generally only between a major third and a minor third, the variation at Ranikhet was between a minor third and a major second, and occasionally even less than that.

Cuculus optatus Gould. The Himalayan Cuckoo.

Calling very vigorously till the end of May. After the end of the month it was less frequently heard, and the call seemed weaker.

Cuculus micropterus Gould. The Indian Cuckoo.

Very numerous, calling throughout the period spent at Ranikhet. It generally begins to call before it is light, and frequently keeps up its call till after dark. The commonly accepted rendering of its call is '*Kaiphāl pakka*', but the rendering given to it by British soldiers stationed in the hills, 'Lost my rifle', is equally good.

Eudynamis scolopaceus (Linn.). The Koel.

Occasionally heard calling, generally below the military hospital.

Psittacula schisticeps (Hodgs.). The Slaty-headed Parroquet.

One seen in forest May 14. No other record.

Upupa epops Linn. The Hoopoe.

Numerous. Nests containing young found on May 7 and 9.

Micropus melba (Linn.). The Alpine Swift.

One seen May 10 about 6,200 ft. No other record.

Micropus affinis (Gray). The Indian House-Swift.

Three seen together May 23. No other record.

Otus spilocephalus (Blyth). The Spotted Scops Owl.

Heard at night from April 30 to June 10, but more commonly before the end of May than after.

Glaucidium brodiei (Burton). The Collared Pigmy Owlet.

One seen May 10. No other record.

Sarcogyps calvus (Scop.). The Black Vulture.

Fairly frequently seen.

Gyps himalayensis Hume. The Himalayan Griffon.

Occasionally seen, never near houses.

Gyps indicus (Scop.). The Long-billed Vulture.

Occasionally seen.

Pseudogyps bengalensis (Gmelin). The Indian White-backed Vulture.

Occasionally seen.

Neophron percnopterus (Linn.). The Scavenger Vulture.

Common.

Gypaëtus barbatus (Linn.). The Lammergeyer.

Very numerous over every type of country, feeding largely from offal in the station itself. A nest was found containing a young bird nearly ready to fly on a cliff below the pipe-line on May 23. The eyrie seemed to have been used for some years, and the ground near was littered thickly with fragments of bone.

Cerchneis tinnunculus Linn. The Kestrel.

Fairly numerous, particularly away from heavy forest. A pair of these birds had a nest on a rock above the pipe-line, where they were feeding a well-grown young bird on May 9 and 10. The old birds appeared to be tempting the young one to exert itself, as they always brought food to the end of the ledge on which the nest was situated farthest from the nest itself. The young bird ran along the ledge to its parents on their arrival, and retired again to the nest when they left. After May 10th, and up to the end of the first week in June, the young bird was being fed in trees and on other ledges of rock, not infrequently flying after its parents and calling shrilly for food.

Microhierax cœrulescens (Linn.). The Red-legged Falconet.

One seen several times about 6,200 ft. On June 2 he was bold enough to perch in the tree in the compound of the bungalow in which I was staying where a pair of Ashy Drongos had their nest. Both Drongos attacked him, and drove him off, pursuing him a good deal further than was their usual custom.

Aquila chrysaëtos (Linn.). The Golden Eagle.

One seen May 8. No other record.

Milvus migrans (Bodd.). The Pariah Kite.

Not very numerous.

Astur badius (Gmelin). The Shikra.

Occasionally seen on rough ground below 6,000 ft.

Sphenocercus sphenurus (Vigors). The Kokla Green Pigeon.

Fairly numerous in more open forest, generally in twos or threes.

Streptopelia orientalis (Lath.). The Rufous Turtle-Dove.

Numerous.

Streptopelia chinensis (Scop.). The Spotted Dove.

Very numerous.

***Streptopelia senegalensis* (Linn.). The Little Brown Dove.**

One seen at Siuni on May 19. Occasionally seen near Ranikhet after that date.

***Streptopelia decaocto* (Frivaldszky). The Indian Ring-Dove.**

Fairly numerous. A pair had just completed a nest on Aug. 17 (when I revisited Ranikhet for two days), and the hen was on the nest and appeared to be in the act of laying when I left.

***Gennæus hamiltoni* (Griff.). The White-crested Kalij.**

A pair seen on May 21, and on two or three subsequent occasions. They were always seen in pairs, and always in the more open type of forest.

***Francolinus francolinus* (Linn.). The Black Partridge.**

One bird was always calling vigorously in the early morning, and sometimes in the evening, in thick, low scrub below the pipe-line, from May 28, onwards. On one occasion my dogs flushed a cock from the spot where he was always to be heard, but on no occasion did I see a hen.

***Lobivanellus indicus* (Boddært). The Red-wattled Lapwing.**

A pair at Siuni on May 19 appeared to be breeding from their behaviour. No other record.

F. S. BRIGGS.

XX.—HOVERING FLIGHT OF BIRDS AND NO WIND.

The flight of birds has always been of great interest to me, but it is a behaviour involving great diversity and complexity of method. Each species of bird has its own distinctive methods, resulting in highly characteristic wing-movements, trajectories and velocities. Some birds are eminently superb gliders on motionless wing when they choose, as our hawks, eagles and buzzards. Others dash along with the directness of an arrow like the ducks and geese, fanning the air with tremendous persistence and energy.

I was much interested in the entertaining discussion of Major R. W. Hingston, 'Effect of wind on the flight of birds', *Journal of the Bombay Natural History Society*, Vol. xxxiii, No. 4, 1929, pp. 992-994. A comment, however, is needed here, bearing on his discussion, 'Effect of Wind on Hovering Flight'. While it may be true, as he states, that many birds as the kestrels, kingfishers and terns, take advantage of wind to perform their hovering activities, one of our American birds, the Ruby-throated Humming Bird quite refutes the concept that birds which poise need wind. Major Hingston's statement that 'No bird can employ its wings for the purpose of just raising itself vertically; there must always be some forward pushing element in the strokes', caught my attention especially, and our little Eastern ruby-throat at once came to mind. During the summer of 1930, I spent much time with these gay visitors in my garden, studying more critically their behaviour in flight. As a result of these observations, I feel that I can confirm my earlier opinions with some confidence.